

Maternal physical activity during pregnancy: trajectories, determinants, and health impacts

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Introduction

- According to the American College of Obstetricians and Gynecologists, healthy women during pregnancy and the postpartum should engage in moderate physical activity (PA) for 30+ minutes per day (*Atal and O'Toole, 2003*).
- Pregnant women following this guideline have lower incidence of gestational diabetes mellitus, less gestational weight gain, and reduction in insulin resistance level (*Wang et al., 2017*).
- Yet, many pregnant women fail to meet this standard and reasons remained under-explored (*Broberg et al., 2015*).

Aims

- Aim1:** To analyze PA trajectories of women throughout their pregnancy.
- Aim2:** To examine associations of season, employment status, and number of live births with PA trajectories during pregnancy.
- Aim3:** To examine impacts of PA on sleep quality and depression.

Methods

Timeline/Data Collection:

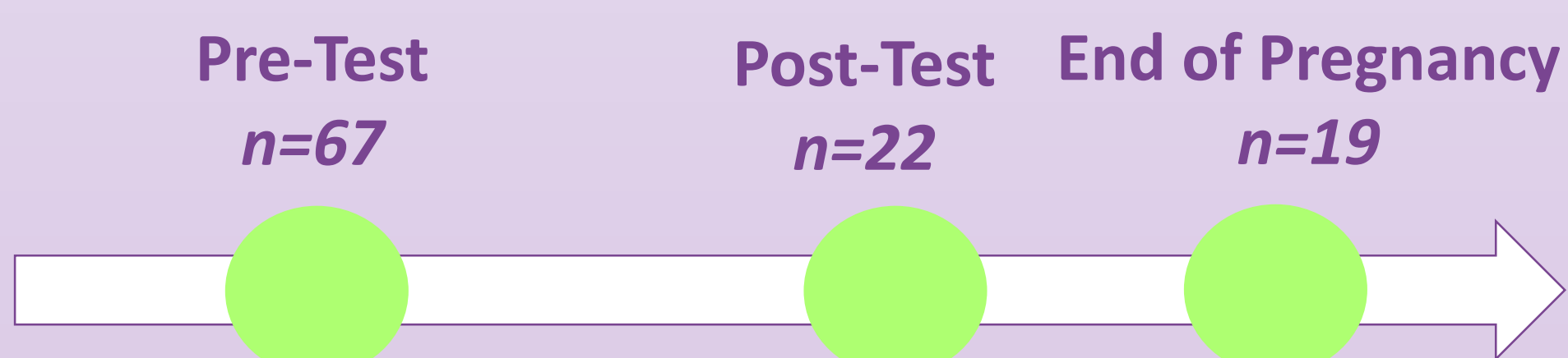


Table 1. Methods of measurement

Measurement	Questionnaire
Physical activity (PA)	International Physical Activity Questionnaire (IPAQ)
Sleep Quality	Pittsburg Sleep Quality Index (PSQI)
Depression	Patient Health Questionnaire (PHQ)
Employment status	Questions relating to
Season during gestational period	sociodemographic factors and
Number of live births	survey date

Domains of the IPAQ:

- WORK
- ACTIVE TRANSPORTATION
- DOMESTIC AND GARDEN (YARD WORK)
- LEISURE-TIME

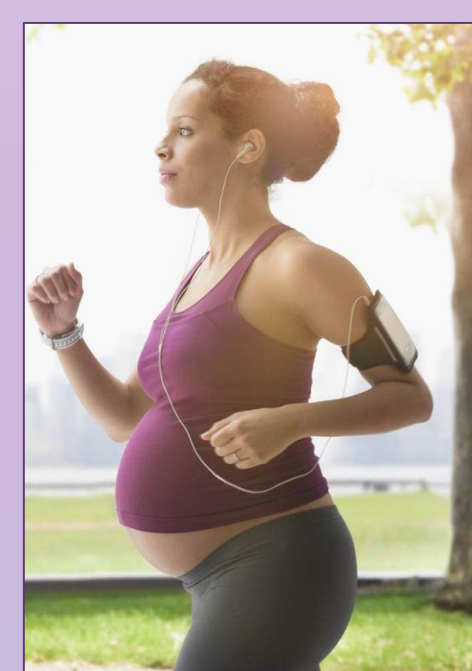


Table 2. MET values used to calculate MET-minutes

PA Intensity	MET Value
Walking	3.0-3.3
Moderate	4.0
Vigorous	6.0-8.0

MET-minutes=(MET value) x (minutes engaged in PA)

- 1 metabolic equivalent (MET) is equal to about 1 kilocalorie of energy expenditure for a 60 kg individual.

Table 3. PA categories

PA category	Definition
LOW	Those individuals who do not meet the criteria for the moderate or high categories.
MODERATE	<ul style="list-style-type: none"> 3 or more days of vigorous-intensity activity of at least 20 minutes per day OR 5 or more days of moderate-intensity activity and/or walking of at least 30 minutes per day OR 5 or more days of any combination of walking, moderate-intensity or vigorous intensity activities achieving a minimum total physical activity of at least 600 MET-minutes/week.
HIGH	<ul style="list-style-type: none"> Vigorous-intensity activity on at least 3 days achieving a minimum total physical activity of at least 1500 MET-minutes/week OR 7 or more days of any combination of walking, moderate-intensity or vigorous-intensity activities achieving a minimum total physical activity of at least 3000 MET-minutes/week.

Results

Figure 1. PA trajectories through pregnancy (p=0.788)

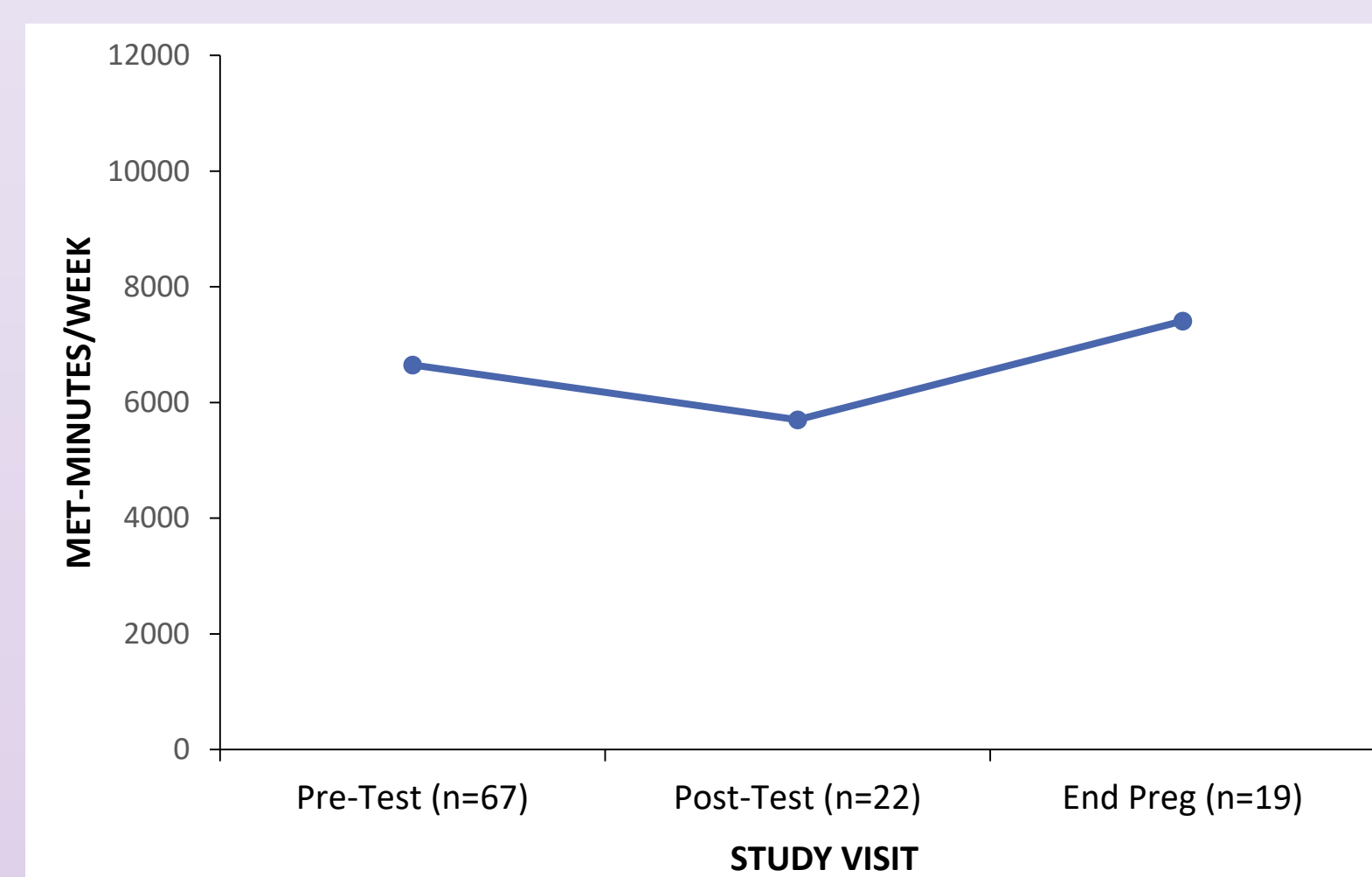


Figure 2. Trajectories of different types of PA

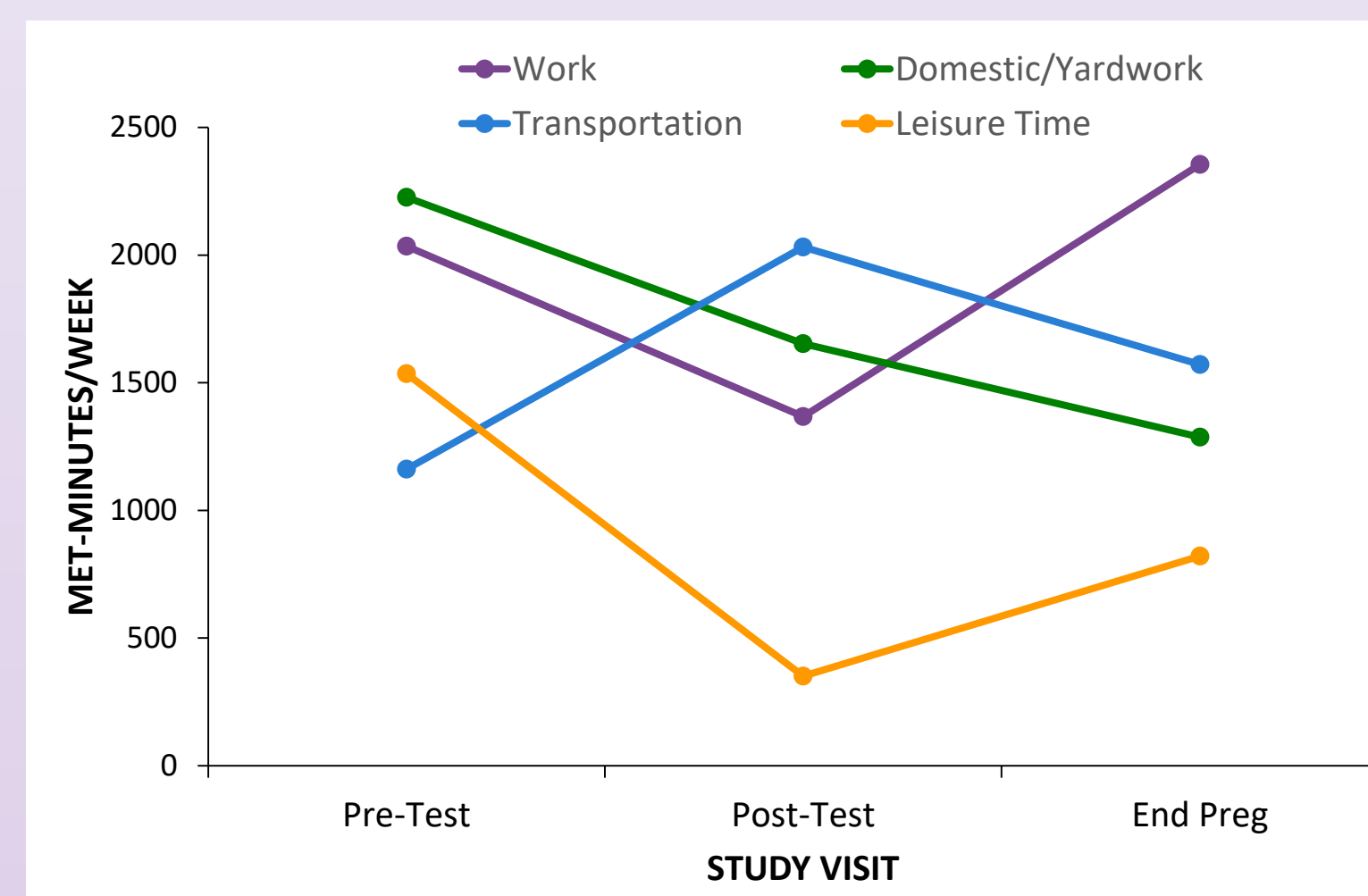


Figure 3. Impact of hours working on PA (p<0.001)

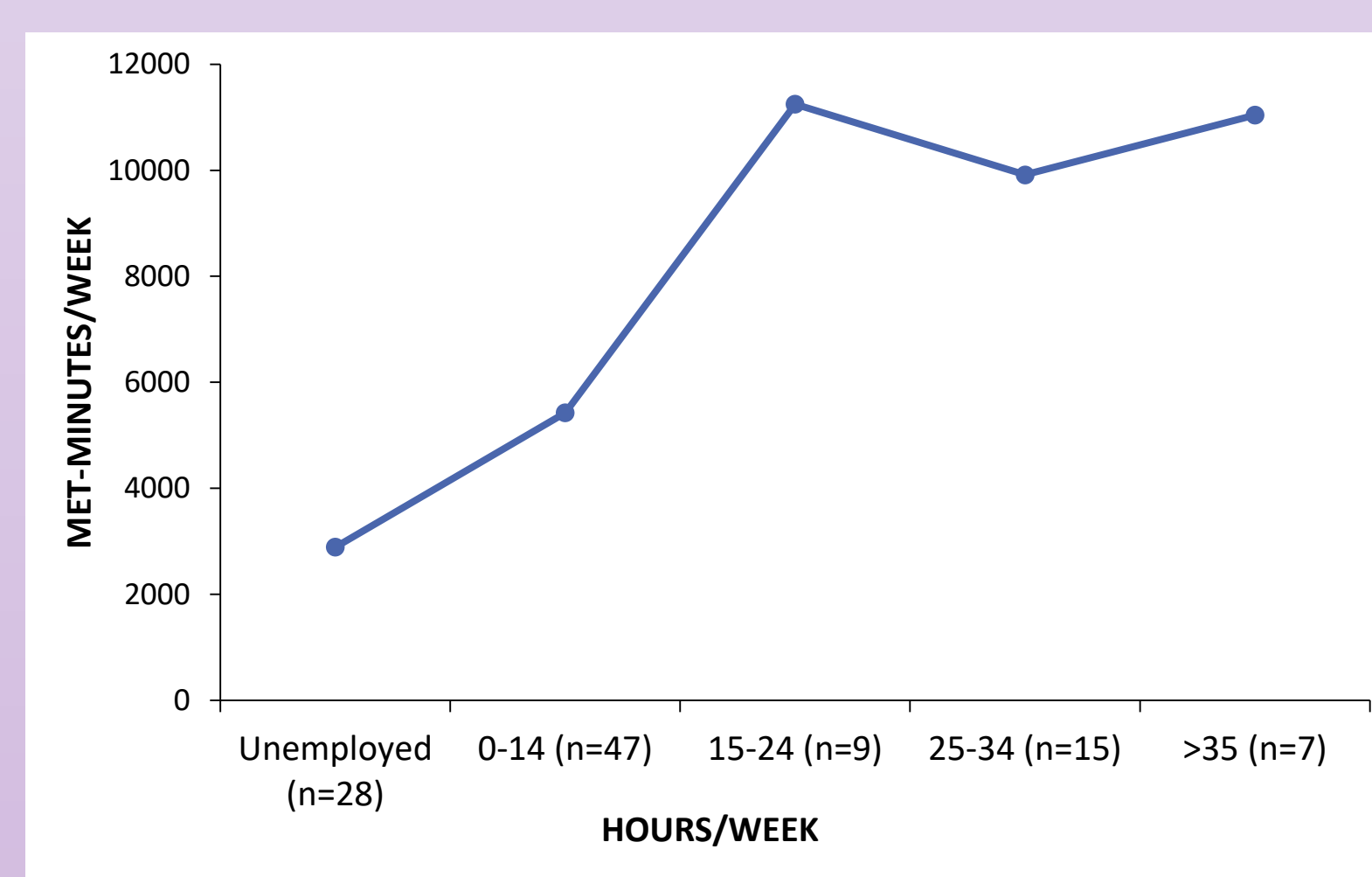


Figure 4. Impact of season on PA (p=0.263)

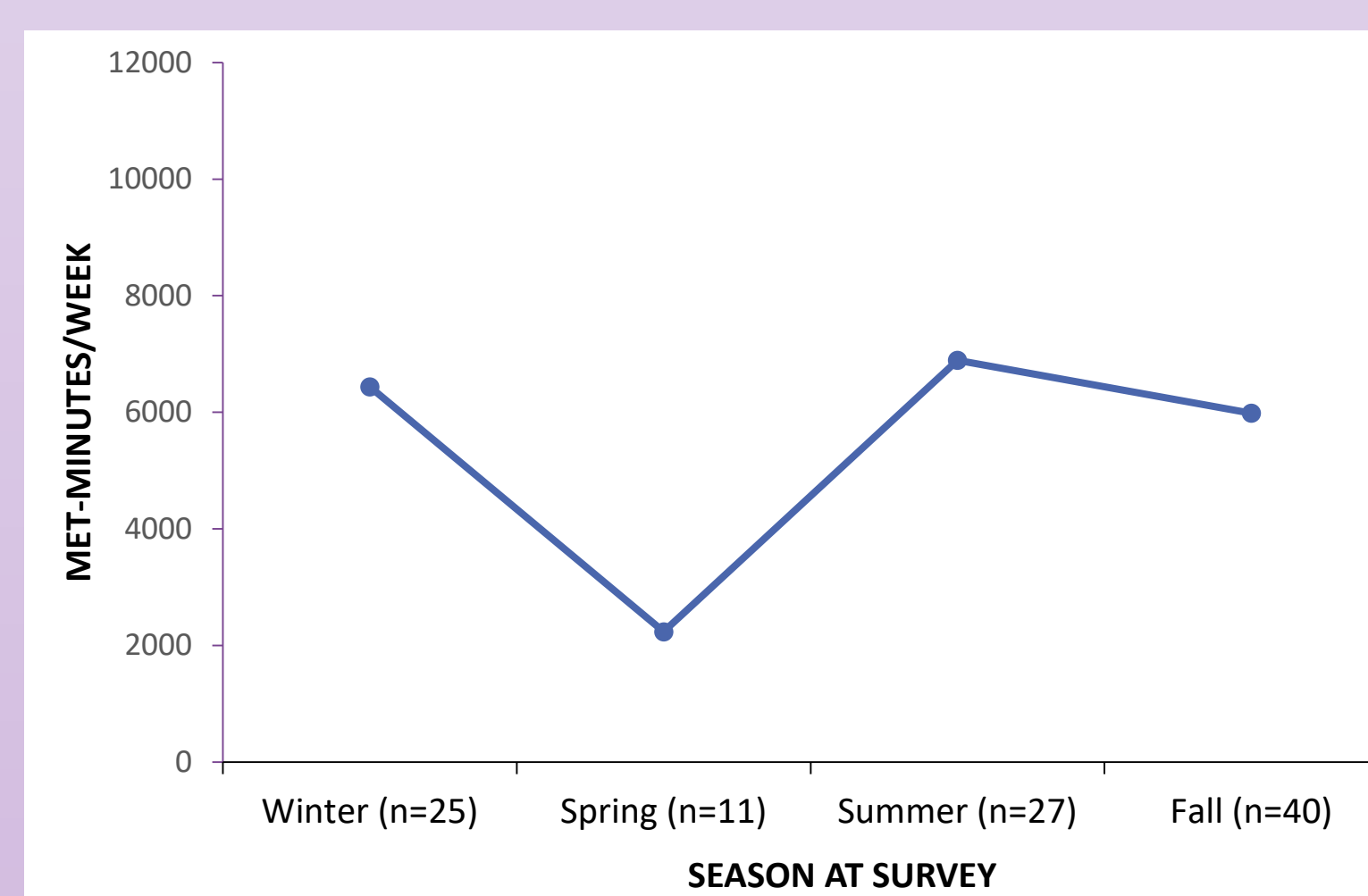


Figure 5: Impact of # of live births on PA (p=0.407)

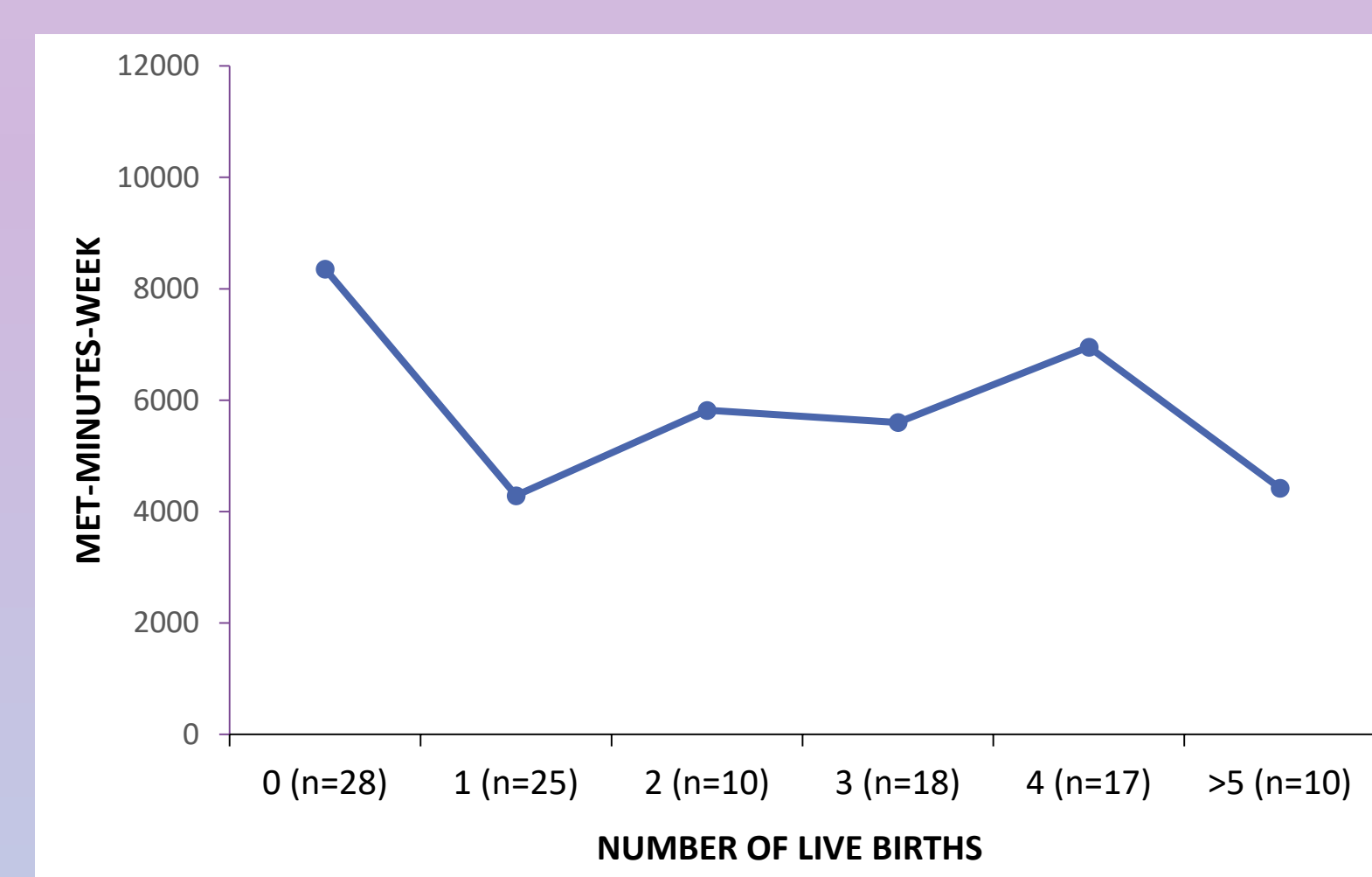


Figure 6. PA trajectories, by sleep quality



Figure 7. Impact of depression on PA (p=0.151)

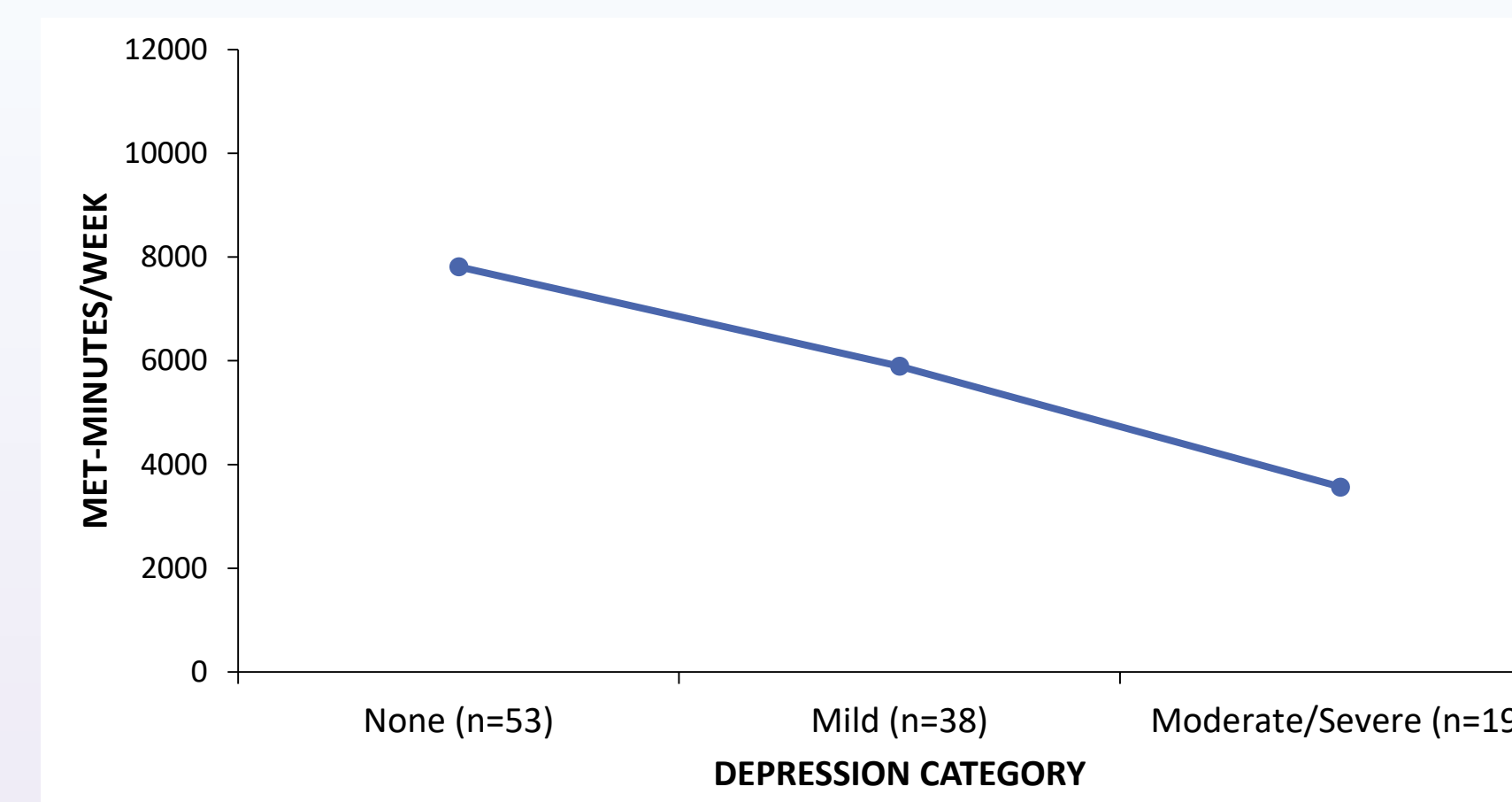
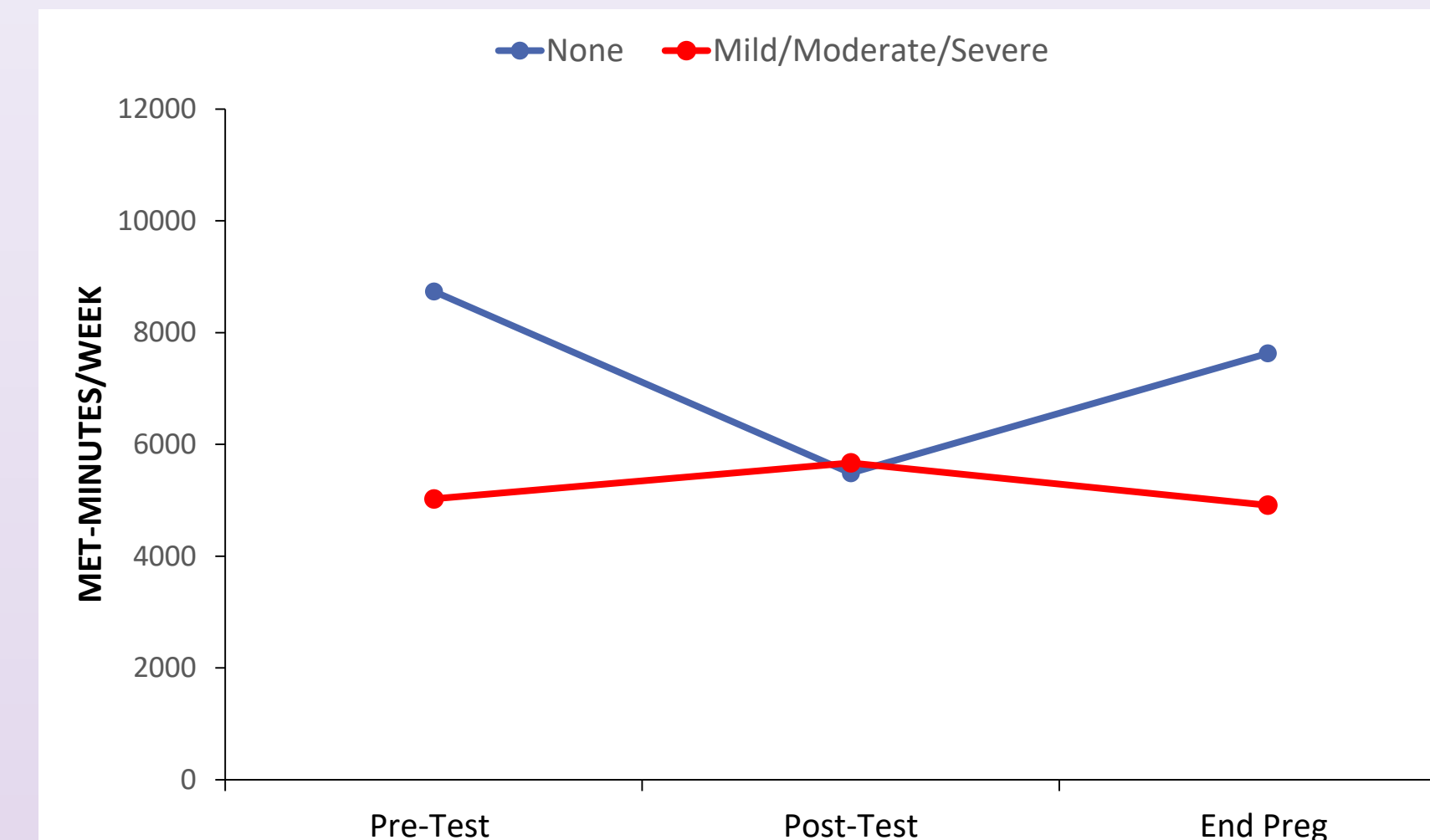


Figure 8. PA trajectories, by depression status



Conclusion

- Being employed was significantly associated with higher maternal PA during pregnancy.
- Maternal PA was lower in Spring than the other three seasons.
- Maternal PA seemed to decrease with severity of depression.

Future works:

- To enroll new participants to increase statistical power.
- To follow participants into postpartum to examine long-term PA.

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